UNITED STATES PATENT OFFICE.

JAMES YOUNG, OF MANCHESTER, ENGLAND.

IMPROVEMENT IN MAKING PARAFFINE-OIL.

Specification forming part of Letters Patent No. 8,833, dated March 23, 1852.

To all whom it may concern:

Be it known that I, JAMES YOUNG, of Manchester, England, have invented improvements in the treatment of certain bituminous mineral substances and in obtaining products therefrom; and I do hereby declare the following to be a full, clear, and exact description of the same.

My said invention consists in treating bituminous coals in such manner as to obtain therefrom an oil containing paraffine, (which I call "paraffine-oil,") and from which oil I obtain paraffine. The coals which I deem to be best fitted for this purpose are such as are usually called "parrot-coal," "cannel-coal," and "gas-coal," and which are much used in the manufacture of gas for the purpose of illumination, because they yield upon distillation at a high temperature olefiant and other highly illuminating gases in considerable quantity, and although some coals last described contain a large amount of earthy matters, those matters do not interfere materially with the performance of my process.

To obtain paraffine-oil from coals I proceed as follows: The coals are to be broken into small pieces of about the size of a hen's egg or less for the purpose of facilitating the operation. The coal is then to be put into a common gas-retort, to which is attached a worm-pipe passing through a refrigerator, and kept at a temperature of about 55° of Fahrenheit's thermometer by a stream of cold water. The temperature of the refrigerator should not be made too low, lest the product of the distillation should congeal and stop up the pipe, and I find that a temperature of about 55° Fahrenheit is sufficient. The retort, being closed in the usual manner, is then to be gradually heated up to a low red heat, at which it is to be kept until volatile products cease to come off. Care must be taken to keep the temperature of the retort from rising above that of a low red heat, so as to prevent as much as possible the desired products of the process being converted into permanent gas. The coke or residue may then be withdrawn from the retort, which, being allowed to cool down below a visible red heat, (to prevent waste of the fresh material to be introduced,) may be again charged with a quantity of coals to be treated in like manner, as I have described. The crude paraffine-oil distilled or driven off from the coals as a vapor will be condensed into a liquid in passing through the cold worm-pipe, from which it will fall into a vessel, which must be provided to receive it.

Instead of obtaining the whole of the paraffine-oil by distillation or driving off, as just described, a portion of it may in some cases, if thought desirable, be run from the retort through an opening and pipe to be provided in the anterior and lower part of the retort for that purpose after it has separated from the coal and assumed a liquid form. I prefer, however, in every case to distill or drive off the whole of the paraffine-oil to be obtained from the coal.

The production of the desired products from a charge of coals in a retort will be known to be finished by the liquid ceasing to run from the worm. The crude product of this process is an oil containing paraffine, which, as I have already stated, I call "paraffine-oil." This oil will sometimes, upon cooling at a temperature of about 40° Fahrenheit, deposit paraffine. Other arrangements of apparatus may be used for subjecting coals to the process for obtaining paraffine-oil therefrom, as I have described; but I prefer to use the apparatus above mentioned, as being well known and easily managed; but in order to obtain the largest quantity of crude paraffine-oil from coals by means of this process, and produce the smallest quantity of permanent gas by the action of the heat employed, whatever may be the apparatus used, care must be taken to heat the coals gradually and to apply the lowest temperature necessary to complete the operation. During the distillation or driving off which I have described a permanent gas will be produced, and this gas may either be collected or suffered to escape, as may be thought expedient. I purify the crude oil obtained, as already described, in the following manner: I put the oil into a cistern and heat it (by a steam-pipe or other means) to a temperature of about 150° Fahrenheit. When thus heated water and undissolved impurities contained in the oil will separate more readily from it than when cold, and the oil being left in a state of rest and kept warm for about a day, many of those impurities will fall to the bottom of the cistern, and the oil may then be run off into another vessel, leaving the residuum behind. I then proceed to distill the oil, for which operation I